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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/381,528	01/04/2000	YOSHINAO TAKETOMI	YAO-V04302	4078

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EXAMINER

CHANG, AUDREY Y

ART UNIT

PAPER NUMBER

2872

DATE MAILED: 06/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/381,528

Applicant(s)

TAKETOMI ET AL.

Examiner

Audrey Y. Chang

Art Unit

2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 April 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-66 is/are pending in the application.
- 4a) Of the above claim(s) 2,3,8-12,14 and 19-66 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 4-7,13 and 15-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other:

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on *April 7, 2003* has been entered.

2. By this amendment, the applicant has amended claims 4, 6, 7, 13 and 15. Claims 4-7, 13 and 15-18 remain pending.

3. Claims 1-3, 8-12, 14, and 19-66 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 8.

4. The rejections to claims 4, 6, 7, 13, and 5, 15-18 under 35 USC 112, first paragraph, set forth in the previous Office Action dated November 29, 2002 with regard to the making of reflection-type hologram are *withdrawn* in response to applicant's amendments.

Claim Rejections - 35 USC § 112

5. **Claims 4, 6, 7, 13 and 5, 15-18 are rejected under 35 U.S.C. 112, first paragraph**, because the specification, while being enabling for using *opening extended in the vertical direction to avoid image blur*, does not reasonably provide enablement for using opening extended in the horizontal direction to obtain best mode of operation. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims. The specification discloses that the opening (22, Figure 16A) having *horizontal* extension

Art Unit: 2872

will *cause image blur* when the opening is used to regulate the reconstruction light for the hologram.

Claims 4, 6, 7 and 13 however have been amended to have the reconstruct light incident on the reflection hologram through an elongated openings arranged such that the light diffuses only in the *width* direction of the reflection type hologram which is understood to be *horizontal direction*, in general.

Applicant's arguments which states that the term "width direction" is applicable to both vertical and horizontal direction that is confusing and fails to make the claimed apparatus operable. Firstly, if the width direction is applicable to *both* vertical and horizontal direction, then the phrase "diffuse **only** in the width direction" does not make any sense. Secondly the applicant's arguments add more confusion to the already confused terminology of "horizontal", "vertical", "width" and "height". The applicant is *requested* to use *consistent set* of terminology both in the specification and the claims to make the matters clear. At this juncture, the scopes and therefore the enablement of the apparatus simply are not presented.

The *essential element* for the apparatus to be operable is to have the shape of slit for forming the *slit object beam*, either using slit to record a transmission hologram or to reconstruct the transmission hologram using a slit, to record the reflection hologram in *consistent* with the *elongation direction* of the aperture or opening used to reconstruct the reflection hologram. *Without* the *slit object beam* for recording the hologram with *extended* viewing zones as shown in Figure 11B, one will **not** be able to obtain the extended viewing zone from the reflection hologram by *simply* using a reconstructing light beam having the claimed diffusion property. *The geometrical relationship between the slit and the "elongated opening" therefore is an essential element for the claims to define an operable apparatus.* Applicant's arguments in the remark also demonstrate such important connection. In fact, as shown in Figure 11A, the extended slit allows a plurality of light sources being used to illuminate the object to create a plurality of object beams that essentially allows a plurality of holograms each corresponds to object light from different light source to be recorded in the holographic plate. This plurality of holograms allows extended viewing zones to be created. By having reconstruct light extended or diffused

Art Unit: 2872

in the same elongation direction of the slit extended view for the holograms can be obtained. If the orientation between the slit and the diffusion direction of the reconstruction light is not the same then no extended viewing zones will be created.

Claim Objections

6. **Claims 4, 6, 7, 13, 5 and 15-18 are objected** to because of the following informalities:

(1). The phrase “and irradiation light incident on the second hologram dry plate with an incident optical path different from that of the object light” recited in claim 4 is confusing since it is not clear what is this phrase has anything to do with the construction of the transmission hologram.

(2). The phrase “the first hologram dry plate” recited in claims 6, 7, and 13 are confusing since it lacks proper antecedent basis from earlier part of the claims.

(3). The phrase “diffuses in **only** the width direction of the reflection type hologram” recited in claims 4, 6, 7 and 13 are confusing since firstly it is technically impossible to have an aperture that **only** diffuses in one direction. Secondly the “width direction” of the reflection type hologram is indefinite since the specification fails to give a definition for such direction.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2872

8. Claims 4-7, 13 and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Kulick in view of the patent issued Honigs (PN. 5,055,684).

Kulick et al teaches a *holographic display* that is comprised of a *holographic plate* (33 of Figure 7 or 77 of Figure 9) and a *light source* (20). Kulick et al teaches that the hologram recorded on the holographic plate (33 or 77) is produced by interfering a *reference light beam* with a light beam having an *object information* generated from a *transmission master hologram* (32 or 75), (please see Figures 7 or 9). Kulick et al further teaches that the transmission master hologram (32 or 75) is produced by splitting a light beam generated by a *laser light source* (20) into a reference light beam (26) and an object light beam (28) wherein the object light beam (28) is *diffusely* reflected by a mirror (34) to the object (36). The diffusely reflected object light beam passes through a *spatial filter* (F), which serves as the *slit*, to control the size of the light beam before it irradiates the object (36). The object light beam then *interferes* with the reference light beam (26) at the *holographic plate* (32) to create the *transmission master hologram* (32), (please see Figure 4 and columns 3-5). Kulick et al teaches that the holographic display may be either of *transmission mode* (33 Figure 7) or of *reflection mode* (77, Figure 9) wherein the object information is displayed by irradiate the holographic plate (33 or 77) with a reconstruction light beam that is the same as the reference beam used to create the holographic display (33 or 77).

Kulick et al teaches that the holographic display plate (33 or 77) may be created as a rainbow hologram wherein the holographic image of the object may be viewable by using a white light. The rainbow hologram is created by allowing only a *slit* of light from the master hologram (32) to illuminate the holographic plate (33 or 77). Kulick et al teaches that the confinement of the illumination may be achieved by **masking** the mater hologram using a masking plate **having apertures or slits** to create the slit beam, (please see column 4, lines 19-23). It is implicitly true that the mask having the slits or apertures must be placed adjacent to the transmission master hologram in order to confine object light beam from the master hologram to form a slit illumination.

Art Unit: 2872

With regard to the feature having the reconstructing light for the reflection type hologram being generated by the light source through an elongated opening arranged such that the light diffuses only in the width direction of the reflection type of the hologram. The Kulick et al reference does not teach such explicitly. Honigs in the same field of endeavor teaches a *reflection* type holographic grating (20, Figure 1) wherein the holographic grating is *reconstructed* by the light generated by a light source (12) that incidents on the holographic grating through an *entrance slit* (18) having elongated opening (Figure 2) such that the reconstructing light is diffused across the width direction of the holographic diffraction for the benefit of generating the reconstructing light with uniform illumination. It would then have been obvious to one skilled in the art to apply the teachings of Honigs to modify the holographic display of Kulick et al for the benefit of providing more uniformly illuminated reconstructing light of the display.

With regard to claims 7 and 17, Kulick et al further teaches that the holographic display plate (33 or 77) may be created as a rainbow hologram wherein the holographic image of the object may be viewable by using a white light. The rainbow hologram is created by allowing only a *slit* of light from the master hologram (32) to illuminate the holographic plate (33 or 77). Kulick et al teaches that the confinement of the illumination may be achieved by either using a *cylindrical lens* to create a slit beam or *masking* the mater hologram using a *masking plate having apertures or slits to create the slit beam*, (please see column 4, lines 19-23). It is implicitly true that the cylindrical lens and the mask having the slits or apertures must be placed adjacent to the transmission master hologram in order to confine object light beam from the master hologram to form a *slit illumination*. But it does not teach that both the mask and the cylindrical lens are used to create the slit beam. However such modification would have been obvious to one skilled in the art since both of the elements create confined slit beam to use both of them would require only routine skilled in the art and rearranging the elements in the display to create better confined slit illumination.

Art Unit: 2872

With regard to claims 16 and 18, Kulick et al teaches that the reference light beam is in a direction orthogonal to the diffused light beam, (please see Figure 7 and 9) however it does not teach explicitly that the reference light for creating the holographic plate is provided by having a plurality of light superposing on one another. However as long as the reference light is kept in coherence with the object light beam or the diffused light beam the reference may easily be modified to have a superposition of a plurality of light beams for the benefit of providing an alternative way of creating a reference light beam.

Response to Arguments

9. In response to applicant's argument that the cited Honigs is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Honigs reference is relied upon to give the teachings for generating a diffused light having particular direction of diffusion to illuminate the diffraction grating. The fact the Honigs reference is applied to a spectrophotometer does not affect the teachings relied upon for generating a diffused illuminating light beam.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. *US Patent issued to Orr et al (PN. 6,233,071)* discloses a holographic optical element that is capable of allowing extended viewing zones wherein an elongated slit is used to create extended object beam.

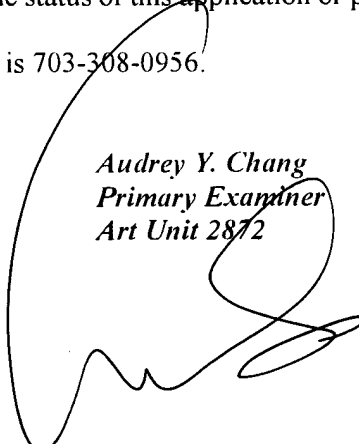
Art Unit: 2872

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 703-305-6208. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on 703-308-1637. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Audrey Y. Chang
Primary Examiner
Art Unit 2872



A. Chang, Ph.D.
May 30, 2003